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ABSTRACT

This manual provides curriculum materials for implementing a career exploration class in industrial communications within a Practical Arts Education program for middle/junior high school students. Introductory materials include the program master sequence, a list of industrial communications occupations, and an overview of the competency-based instructional system for practical arts. The instructor's guide to learning activities contains guide sheets for each task assignment sheet; these sheets present objectives, attitudes and values to be developed, checkout activities, recommended references and audiovisuals, notes and suggestions for instruction, and references and necessary tools and equipment. Master copies of learning activities are included. Appendixes include a vocabulary listing, a list of practical arts videotapes, a list of references appropriate for career exploration, and ideas for addressing students with special needs. The nine student task assignment sheets are also included. Each contains the following components: an introduction, objectives, learning activities, checkout activities, vocabulary, instruction sheets, and a copy of the instructor's final checklist. Tasks are provided for four families of industrial communications occupations: drafting, electricity/electronics, graphic arts, and visual communications. (YLB)

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Instructor's Manual

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

Competency - Based Education

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1983
Kentucky Department of Education
Raymond Barber, Superintendent of Public Instruction

PRACTICAL ARTS

Industrial Communications Exploration

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1983

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[Student Task Assignment Sheets]

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This Practical Arts Curriculum is the result of contributions from a number of people.

Teachers who assisted in the development of the materials are:

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PROGRAM MASTER SEQUENCE
PRACTICAL ARTS

Industrial Communications Exploration

CODE NUMBER		MODULE STOCK NUMBER	SLIDE STOCK NUMBER	TAPE STOCK NUMBER
	DRAFTING FAMILY			
PA-IC-1	Read a Scale	6-231		
PA-IC-2	Identify Common Drafting Equipment	6-232		
PA-IC-3	Draw Parallel Lines	6-233		
	ELECTRICITY/ELECTRONICS FAMILY			
PA-IC-4	Identify Electronic Communications Systems	6-234		
PA-IC-5	Sketch a Series Circuit	6-235		
PA-IC-6	Wire a Plug to a Cord	6-236		
	GRAPHIC ARTS FAMILY			
PA-IC-7	Design a Silk-Screen Stencil	6-237		
PA-IC-8	Cut a Silk-Screen Stencil	6-238		
	VISUAL COMMUNICATIONS FAMILY			
PA-IC-9	Pad & Paper	6-239		

INDUSTRIAL COMMUNICATIONS OCCUPATIONS

Drafting Job Family

Civil Drafter
Electrical Drafter
Electronic Drafter
Furniture Detailer
Patent Drafter
Structural Drafter
Technical Illustrator
Tool Design Drafter

Electricity/ Electronics Job Family

Electrician
Electrician Helper
Electrical-Installation Supervisor
Electronics Technician
Industrial Designer
Neon-Tube Pumper
Televison-Cable Installer

Graphic Arts Job Family

Graphic Designer
Template Reproduction Technician
Cutter
Hand Collator
Film Stripper
Silk-Screen Cutter
Screen Printer

Visual Communications Job Family

Compositor
Lithographer
Photoengraver
Electrotyper
Printing Press Operator
Plate Maker
Engraver
Bookbinder
Bindery Worker
Sign Painter

OVERVIEW OF THE CBVE INSTRUCTIONAL SYSTEM FOR PRACTICAL ARTS

Overview of Program

The purpose of the Practical Arts Education program is to broaden the experiences of middle/junior high school students by providing them with an opportunity to become oriented to the world of work and explore a diversity of career goals in order that they may be better prepared to make decisions on their personal needs and future goals. The Practical Arts program consists of a series of career exploration classes based on the occupational clusters spread over a two-year period. A cruise through each occupational cluster shall include the implementation of three behavioral components or domains.

(A) Cognitive: Students shall survey or cruise the content of the occupational cluster. This survey should include the scope, levels, working conditions, entry requirements, duties performed, opportunities, and related jobs in the occupational cluster.

(P) Psychomotor: Students shall have in each cluster experiences of tasks that will be the same as or similar to those who work in the occupational cluster. These experiences or tasks shall be action oriented, vary with the students' interests, aptitudes, and abilities, and be at various levels of employment within a cluster.

(C) Affective: Students shall receive guidance and the opportunity to systematically apply those knowledges and experiences within the cluster to his/her own interest and abilities, his/her present and future choices, and future occupational decisions and experiences.

The competency-based vocational education curriculum is specifically directed at the psychomotor, activities, experience, or tasks aspect of the Practical Arts program. Teachers are encouraged to augment their lesson plans with cognitive information about the occupational clusters from other sources. The curriuclum here will help specifically in the psychomotor aspect of the program.

Competency-Based Vocational Education

The purpose of this manual is to aid the instructor in implementing a competency-based instructional program. It is intended as a guide and resource for the teacher using CBVE materials. The materials in any occupational area have several common elements, particularly their purpose and their format, which will be discussed later.

Regardless of the delivery system used to implement it, CBVE is based on the concept of competencies. That is to say, it is an instructional system in which: (1) the competencies for specific occupations are built around tasks validated by incumbent workers; (2) instruction is designed around performance objectives based on the worker tasks; (3) students are held accountable for meeting the specified minimum standards of performance required for entry-level jobs.

These instructional materials have been developed by Kentucky teachers. They have attempted to provide relevant learning activities and performance objectives which include: (1) the skills (or tasks) which the student must learn; (2) the conditions under which the student must perform; and (3) the standard or level of achievement to which the student must perform.

The purpose of the Curriculum Unit (CBVE) is to develop and assist the implementation of competency-based instructional materials. The Unit is located at:

1910 Capital Plaza Tower
Frankfort, KY 40601

To facilitate the implementation of CBVE materials, a person has been identified in each vocational region as a CBVE Contact Person. Please address any problems or concerns about your CBVE program to your Regional Contact Person.

By the time you receive your CBVE materials, you should have attended a workshop for teachers implementing CBVE materials. The Inservice Education modules, which were distributed at the workshop, are your greatest source of suggestions for setting up and managing a CBVE program. For more detailed information, consult your inservice modules or your Regional Contact Person.

Using the Instructor's Manual

This Instructor's Manual is divided into two sections: introductory materials and Instructor's Guide to Learning Activities. The introductory materials include, among other things, the Program Master Sequence. It contains a listing of the task assignment sheet and slide/tape titles, code numbers, and stock numbers.

You can use the Program Master Sequence as a quick reference guide to the contents of the instructional program, as well as a checklist for insuring that all materials have been received. The code numbers and stock numbers serve as a guide to ordering additional materials.

The Instructor's Guide to Learning Activities is the heart of this manual, because it contains a brief listing of the contents of each task assignment sheet with suggestions for its use. It is suggested that you insert the corresponding task assignment sheet behind the Guide Sheets so you will have the complete program in one place.

Format is consistent throughout all CBVE programs in that the materials contain the same basic components:

Introduction - tells the student what he/she will learn and why it is important.

Objective - clearly states what the student is expected to know or do, under what conditions, and how well.

Learning Activities - a "road map" for the student to follow in going through the task assignment sheets; list the various activities the student will perform in learning the task.

Instructor's Final Checklist - tells the student and the instructor exactly what the student will be evaluated on in the check-out activity; the instructor uses this sheet to rate the student's performance.

Check-Out Activities - tells the student what he/she will be asked to do for the final test or performance.

The Instructor's Guide Sheets in this manual present the essential information in capsule form. In addition, they list: the recommended references and audio-visuals; attitudes and values to be developed; notes and suggestions for instruction; alternate activities for students; necessary tools and equipment; and space for teacher's notes.

The task assignment sheets are designed to be left intact. Students should be reminded not to write on any of the pages. In some cases, they will be required to obtain duplicates or sheets like the ones shown. These are often student self-checks. They can be filed in a folder and can be obtained as needed.

The Instructor's Final Checklist is another page that should not be written on. It should remain in the task assignment sheet although you may want to make additional copies of it to place in students' folders.

INSTRUCTOR'S GUIDE TO LEARNING ACTIVITIES

READING A SCALE

OBJECTIVE

GIVEN an architect's scale, layout lines, and scale specifications,

MEASURE EACH LINE TO THE SPECIFIED SCALE.

AT LEAST 90% of the readings should be accurate.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that a drafter's work is very exacting.

CONTENTS

	Learning Activity Number
Instructor's Final Checklist	
READING THE ARCHITECT'S SCALE	6

CHECK-OUT ACTIVITY

Your teacher will provide layout lines of different lengths and scale specifications. Use the architect's scale to measure each line to the specified scale.

SUGGESTED REFERENCES

Feirer/Lindbeck, Basic Drafting, Chas. A. Bennett Co., Inc., 1978.

Miller and Ross, Basic Industrial Arts, McKnight Publishing Co., First Edition, 1978.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOCLS AND EQUIPMENT	TEACHER'S NOTES
1	Have students read about reading the architect's scale. Discuss the information. NOTE: The references listed here are suggested ones. You may use any appropriate references available.	Basic Industrial Arts, pp. 26-28 Basic Drafting, pp. 50-51	
2	Review each of the scale measurements for the class.	Architect's scale	
3	On the chalkboard write the scales on an architect's scale: ½," 18", etc. Beside each scale write several of its divisions: 0, 4, 44, 8, etc. Divide the class into groups. Have each group find the scale and each division listed.		
4	Show the class how to use the architect's scale.	Architect's scale Lines of various lengths	
5	Draw a set of lines of different lengths. Divide the class into small groups. Provide each group a copy of the lines, and have the members measure the lines using the scale(s) you specify. Let the groups compare the answers.	Lines of different lengths Architect's scale	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
6	Provide each student a copy of the Check-Out Activity Sheet. Have him/her measure and record the length of each line. Use the Answer Key to check the answers. Use the Instructor's Final Checklist to evalute each student's work.	Check-Out Activity Sheet (Master Copy in this section) Answer Key Architect's scale Instructor's Final Checklist	

CHECK-OUT ACTIVITY

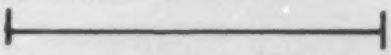
READING THE ARCHITECT'S SCALE

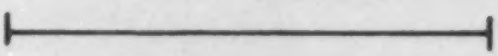
Instructions: Measure each of the lines below with an architect's scale. Use the scales indicated. Record your answers in the table.

Scale:

3/32" = 1'0"
1/8" = 1'0"
3/16" = 1'0"
1/4" = 1'0"
3/8" = 1'0"
1/2" = 1'0"
3/4" = 1'0"

Line A

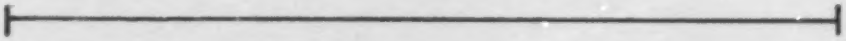
Line B 

Line C 

Scale	3/32"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"
Line A							
Line B							
Line C							

Scale:

1 1/2" = 1'0"
3" = 1/0"

Line D 

Line E

Scale	1 1/2" = 1'0"	3" = 1'0"
Line D		
Line E		

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CHECK-OUT ACTIVITY

READING THE ARCHITECT'S SCALE

ANSWERS

Scale	3/32"	1/8"	3/16"	1/4"	3/8"	1/2"	3/4"
Line A	15'4"	11'7"	7'8"	5'9"	3'10"	2'10½"	1'11"
Line B	24'0"	18'0"	12'0"	9'0"	6'0"	4'6"	3'0"
Line C	30'8"	23'0"	15'4"	11'6"	7'8"	5'9"	3'10"

Scale	1 1/2" = 1'0"	3" = 1'0"
Line D	3'4"	1/8"
Line E	4'0"	2'0"

IDENTIFYING COMMON DRAFTING EQUIPMENT

OBJECTIVE

GIVEN pictures of basic drafting equipment,

IDENTIFY EACH INSTRUMENT PIECE OF EQUIPMENT.

YOU SHOULD identify each piece of the equipment correctly.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that each profession has its tools of the trade. The person in a profession must be proficient in the use of the tools and must be able to use them in a safe manner.

CONTENTS OF MODULE

Instructor's Final Checklist	Learning Activity Number
IDENTIFYING COMMON DRAFTING EQUIPMENT	3

CHECK-OUT ACTIVITY

Your teacher will provide pictures of common drafting equipment. Write the name of each piece of equipment.

SUGGESTED REFERENCES

Feirer and Zindbeck, Basic Drafting, Bennett Publishing Co.

Miller, Maddox, Smith, Exploring Careers in Industry, McKnight Publishing Co.

Walker, Exploring Drafting, Goodheart-Willcox Book Co.

Miller and Ross, Basic Industrial Arts (Drafting), McKnight Publishing Co.

Betts, Fannin, Havenstein, Exploring Construction, McKnight Publishing Co.

Groneman and Feirer, General Industrial Education, McGraw-Hill Book Co.

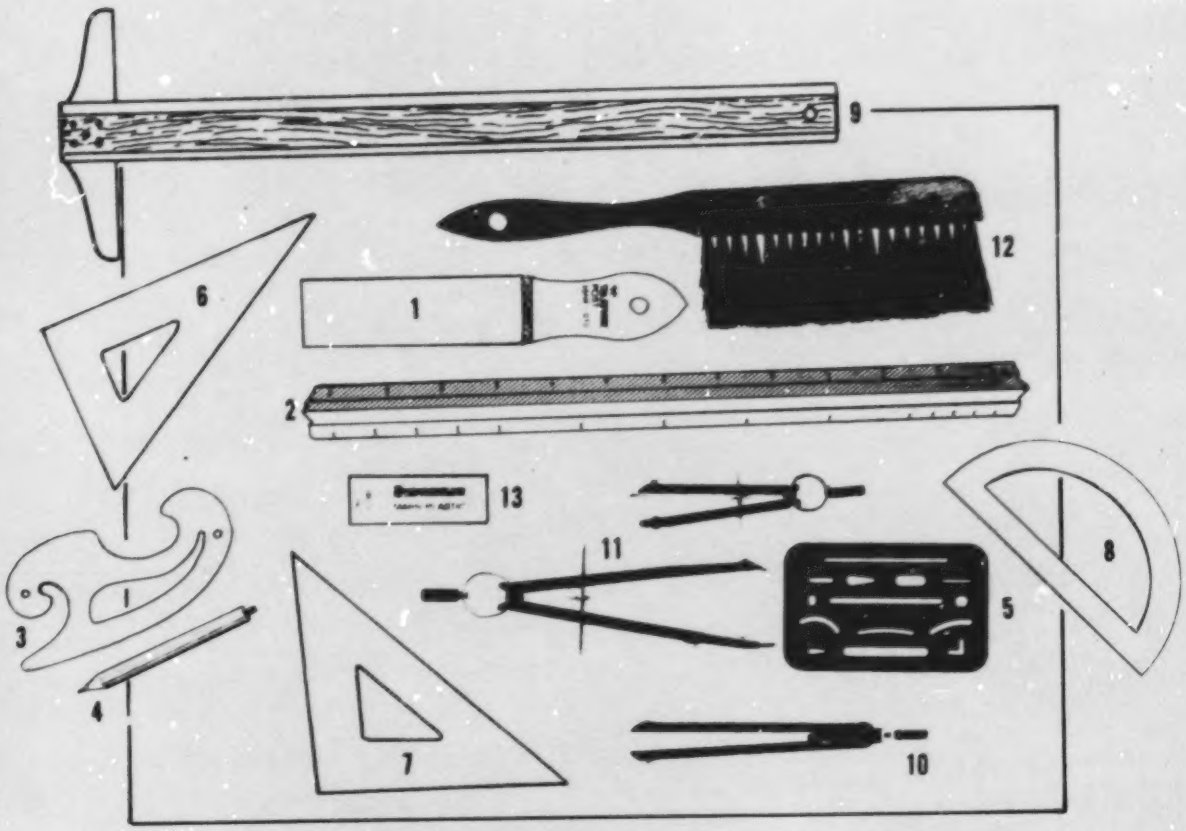
Groneman, Exploring Industry, Stech-Vaughn Co.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have students read about common drafting equipment and make a list of the equipment described.	See "Suggested References" on the preceding page.	
2	Make a display of the drafting tools listed. (If you do not have all the items, you may make drawings and write the names under them. See the Check-Out Activity Sheet.) Describe the use of each tool, and have students write the use by each piece they listed in Learning Activity 1.	Sandpaper pad Scale French curve Lead holder, mechanical pencil Eraser shield 30°-60° triangle 45° triangle Protractor T-square Dividers Compass Drafting brush Erasers	
3	Provide each student a copy of the Check-Out Activity Sheet, and have him/her li[illegible] the equipment shown. Use the Answer Key to check the answers. Use the Instructor's Final Checklist to evaluate each student.	Check-Out Activity Sheet (Master Copy in this section) Answer Key (Copy in this section) Instructor's Final Checklist	

CHECK-OUT ACTIVITY

IDENTIFYING COMMON DRAFTING EQUIPMENT

On a separate piece of paper, identify the following drafting equipment:



Note: Not drawn to scale

CHECK-OUT ACTIVITY

IDENTIFYING COMMON DRAFTING EQUIPMENT

ANSWERS

1. Sandpaper pad (used to sharpen pencils)
2. Scale
3. French curve
4. Lead holder, mechanical pencil
5. Eraser shield
6. 30°-60° triangle
7. 45° triangle
8. Protractor
9. T-square
10. Dividers
11. Compass
12. Drafting brush
13. Erasers

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DRAWING PARALLEL LINES

OBJECTIVE

GIVEN a T-square, triangle, drawing board or table, pencil, paper, ruler, and masking tape,

DRAW VERTICAL, HOFIZONTAL, AND INCLINED PARALLEL LINES.

YOUR DRAWINGS should match your teacher's master copy.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that being able to draw parallel lines is a basic drafting skill.

CONTENTS OF MODULE

Instruction Sheet	Learning Activity Number
I. HOW TO DRAW PARALLEL LINES	1
Instructor's Final Checklist	
DRAWING PARALLEL LINES	5

CHECK-OUT ACTIVITY

You will be provided the necessary drafting tools and supplies. Draw vertical, horizontal, and inclined parallel lines.

SUGGESTED REFERENCES

Feirer and Lindbeck, Basic Drafting, Chas. A. Bennett Co.

Miller and Ross, Basic Industrial Arts (Drafting), McKnight Publishing Co.

Groneman and Feirer, General Industrial Education, McGraw-Hill Book Co.

Miller, Maddox, Smith, Exploring Careers in Industry, McKnight Publishing Co.

Betts, Fanen, Haivenstein, Exploring Construction, McKnight Publishing Co.

Walker, Exploring Drafting, Goodheart-Willcox Publishing Co.

Brown, Build a Course (Drafting), Goodheart-Willcox Publishing Co.

Groneman, Exploring Industries, Stech-Vaughn Co.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have students read and look at the illustration in the Instruction Sheet. Discuss the information.	Instruction Sheet I	
2	Have the students read about how to layout and draw parallel lines in a reference. Discuss the information.	See "Suggested References" on the preceding page.	
3	Demonstrate how to align the drafting paper. Have students practice aligning paper. They may work in small groups.	Drawing board or table top (A 12" X 17" piece of 3/4" plywood works well as a drawing table.) T-square (one can be made of 1 1/2" lattice available from a lumber yard.) Masking Tape Paper	
4	Demonstrate how to draw horizontal, vertical, and inclined parallel lines. Let the students practice drawing the lines.	Drawing board or table T-square Triangle Ruler Pencil Paper	
5	Make a master drawing of the horizontal, vertical, and inclined parallel lines. (Use drafting tracing paper or onion skin typing paper.) Follow the instructions in Instruction Sheet I. Check each student's drawings by placing your master copy over them. They should be the same.	Tools and supplies listed in Learning Activity #4 Master drawing Instructor's Final Checklist	

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LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
5	Use the Instructor's Final Checklist to evaluate each student.		

MAKING CHANGE

OBJECTIVE

IDENTIFY ELECTRONIC COMMUNICATIONS SYSTEMS.

YOU SHOULD identify at least eight systems correctly.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that the demand for communications channels is increasing dramatically.

CONTENTS OF MODULE

Instructor's Final Checklist	Learning Activity Number
IDENTIFYING ELECTRONICS COMMUNICATIONS SYSTEMS	5

CHECK-OUT ACTIVITY

List eight electronic communications systems.

SUGGESTED REFERENCES

Miller and Culpepper, Experiences With Electronics, South-Western Publishing Co., 1983.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
	You may introduce this task by asking for class reaction to this pretend situation: "Pretend that today you will hear nothing, see nothing, and read nothing. What will the world around you be like?"		
1	Have the class read about electronic communications. Have the students identify the three groups of communications systems: line (telegraph, telephone); air (radio, TV, satellite, light wave); and home (video tape recorders, video disc players).	Experiences with Electrons, pp. 154-155	
2	Have students write a brief report on how one of the following electronic devices works: telegraph, telephone, radio, television, communications satellite, lightwave communications.	Experiences with Electrons, pp. 156-180	
3	Duplicate copies of the Morse Code or post it in the classroom. Have students write messages in Morse Code. Divide the class by twos. Let students decipher each other's message as they tap it out.	"International Morse Code" (Master Copy in this section)	

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
4	Have students prepare a poster or bulletin board display of one of the groups of electronics communications: line, air, home.	Magazines, bulletins, pamphlets Poster supplies Bulletin board supplies	
5	Have students list at least eight electronic communications systems. Use the Instructor's Final Checklist to evaluate each student.	Instructor's Final Checklist	
	If time permits you may let groups of students build a foxhole radio (crystal set receiver.)	"Tools needed to build a 'Foxhole' Radio" "Foxhole Radio" (Master Copies are provided in this section)	

TOOLS NEEDED TO BUILD A "FOXHOLE" RADIO

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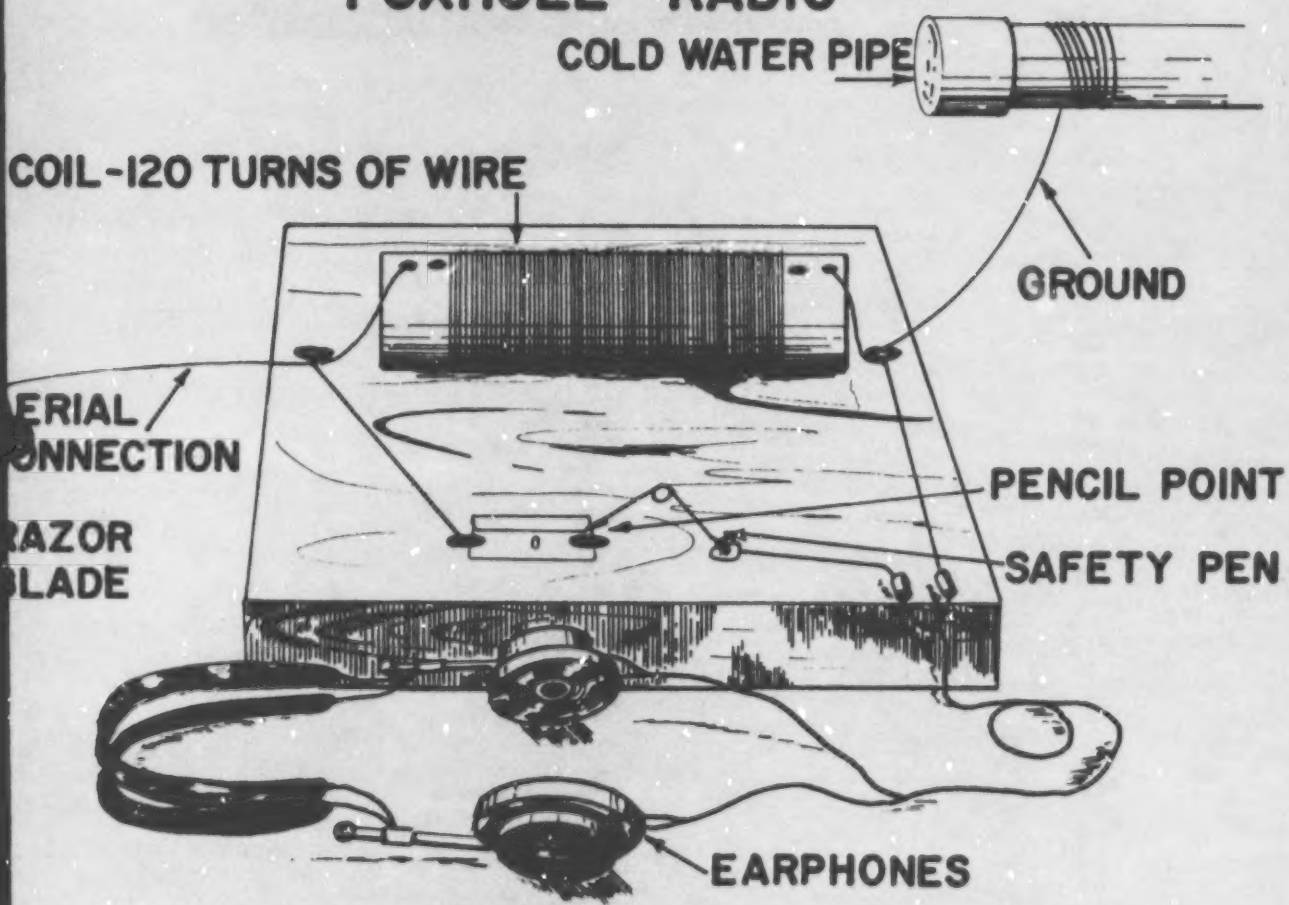
FOXHOLE RADIO



BEST COPY AVAILABLE

International MORSE CODE

A	•–	N	–•
B	–•••	O	–––
C	–•–•	P	•––•
D	–••	Q	––•–
E	•	R	•–•
F	••–•	S	•••
G	––•	T	–
H	••••	U	••–
I	••	V	•••–
J	•–––	W	•––
K	–•–	X	–••–
L	•–••	Y	–•––
M	––	Z	––••

SKETCHING SERIES CIRCUITS

OBJECTIVES

GIVEN the power source and load for three series circuits,

MAKE SKETCHES OF THE SERIES CIRCUITS.

EACH SKETCH must be neat, cleanly drawn, and include the correct power source, load, and completed circuit.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that electricity can cause fatal accidents and that caution must be exercised when handling electrical devices.

CONTENTS

Instructor's Final Checklist	Learning Activity Number
SKETCHING SERIES CIRCUITS	4

CHECK-OUT ACTIVITY

Your teacher will provide you with the power source and load for three series circuits. Sketch and label each series circuit.

SUGGESTED REFERENCES

Miller and Culpepper, Jr., Experiences With Electrons, South-Western Publishing Company, 1983 edition.

Miller, Maddox, and Smith, Exploring Careers in Industry, McKnight Publishing Company, 1975 edition.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have students read and study the drawings in reference books about series circuits. Discuss the information with the class.	Experiences With Electrons, pp. 57-61 Exploring Careers in Industry, pp. 355-356	
2	Sketch and label several series circuits on the chalkboard. Explain each part of the series.		
3	Provide the class with a few problems. An example is: $R_T = R_1 + R_2 + R_3 + R_4$ $R_T = 10\Omega + 20\Omega + 5\Omega + 15\Omega$ Have the students practice sketching series circuits. Work with the students as needed.	Power sources and loads for sketching series circuits $\text{CURRENT} = \frac{\text{VOLTS}}{\text{OHMS}}$ $\text{CURRENT}_I = \frac{100\text{ V}}{50\ \Omega}$	
4	Have students sketch and label a series circuit for each problem. Use the Instructor's Final Checklist to evaluate each student's work.	Power source and load for three series circuits Instructor's Final Checklist	

WIRING A PLUG ONTO A CORD

OBJECTIVES

GIVEN an extension cord, a male plug, pocket knife, wire strippers, and standard 4" screwdriver,

WIRE THE PLUG ONTO THE CORD.

YOUR WORK WILL BE RATED in accordance with the Instructor's Final Checklist.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that they can save money in repair bills by making simple repairs themselves.

CONTENTS

Instructor's Final Checklist	Learning Activity Number
WIRING A PLUG ONTO A CORD	5

CHECK-OUT ACTIVITY

Your teacher will provide the necessary supplies and tools. Wire a plug onto a cord.

RECOMMENDED REFERENCE

Miller, Maddox, and Smith, Exploring Careers in Industry, McKnight Publishing Company, 1975.

Henderson, G.E., Maintaining the Lighting and Wiring System, American Association for Vocational Instructional Materials, 1974.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class study about wiring a plug. Discuss the information.	Exploring Careers in Industry, p. 374	
2	Demonstrate how to wire a male plug onto an extension cord. Stress the safety features.	Extension cord Male plug Pocket knife Wire strippers Standard 4" screwdriver	
3	Divide the class into groups. Provide each group a properly wired plug. Have the students remove the protective cover and examine the plug.	Wired plugs	
4	Have students practice wiring a plug. Check each one to determine if it has been wired properly. (NOTE: The male plug may be cut off the cord and the students may reinstall it. Each student would use about two inches of the cord.)	See supplies listed in Learning Activity 2	
5	Have students wire a plug onto a cord. Use the Instructor's Final Checklist to evaluate each wired plug.	See supplies listed in Learning Activity 2 Instructor's Final Checklist	

DESIGNING A SILK-SCREEN STENCIL

OBJECTIVE

GIVEN a thin sheet of paper, a piece of screen film, and dark, fine-tip marker,

DESIGN A SILK-SCREEN STENCIL.

YOUR design should be simple, neat, in proportion, and balanced on the screen film.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that silk-screening process makes it possible to print quantities of artistic designs at a comparatively low cost.

CONTENTS

	Learning Activity Number
Instructor's Final Checklist	
DESIGNING A SILK-SCREEN STENCIL	4

CHECK-OUT ACTIVITY

Trace the outlines of your design onto the screen film.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Show students a variety of simple silk-screen designs.	Examples of several simple silk-screen designs.	
2	Have students find at least three suitable designs or decide on three of their own. Have them sketch the designs and turn them in to you. Help each student choose the best design.	Magazines	
3	Have each student sketch his/her design on thin paper.	Thin sheets of paper	
4	Have each student trace the outline of his/her design onto a piece of screen film. Use the Instructor's Final Checklist to evaluate each student's design.	Designs prepared in Learning Activity 3 Screen film Dark, fine-tip marker Instructor's Final Checklist	

HAND CUTTING A SILK-SCREEN STENCIL

OBJECTIVES

GIVEN a piece of screen film, a sharp exact-o knife, and a design,

HAND CUT A SILK-SCREEN STENCIL.

The screen cut should be true to design. The lines should be neat, clean, and crisp with sharp corners and smooth flowing curves. The screen should be cut through the top layer but not through the backing paper.

ATTITUDES AND VALUES TO BE DEVELOPED:

--Students will realize that rushing through an exacting job often results in sloppy work. Jobs well done usually require time and patience.

CONTENTS OF MODULE

Instructor's Final Checklist	Learning Activity Number
HAND CUTTING A SILK-SCREEN STENCIL	5

CHECK-OUT ACTIVITY

Your teacher will provide a piece of screen film, a knife, and a design. Hand cut a silk-screen stencil.

RECOMMENDED REFERENCE

Miller, Maddox, Smith, Exploring Careers in Industry, McKnight Publishing Co., 1975.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the students read about silk-screening. Discuss the information.	Exploring Careers in Industry, p. 84	
2	Divide the class into groups. Provide each group a screen already cut. Have the students examine it. Point out the features of a well cut screen.	Examples of screens already cut	
3	Demonstrate the proper techniques for hand cutting silk-screen stencils.	Screen film Exact-o knife Design	
4	Have students practice cutting small screens, and comparing their screens with the examples used in Learning Activity 2.	Small pieces of screen film Exact-o knives Designs Examples of screens used in Learning Activity 2	
5	Provide each student the necessary supplies and have him/her hand cut a silk-screen stencil. Use the Instructor's Final Checklist to evaluate each stencil. (NOTE: You may want to have students silk-screen the design on a T-shirt or other articles.)	Screen film large enough for design Design to be cut Exact-o knives Instructor's Final Checklist	

MAKING A PAD OF PAPER

OBJECTIVE

GIVEN a pencil, ruler, scissors, paper, light-weight cardboard, paper cutter, vise, and glue or binder paste.

MAKE A PAD OF PAPER.

YOUR PAD will be rated in accordance with the Instructor's Final Checklist.

ATTITUDES AND VALUES TO BE DEVELOPED

--Students will realize that paper padding is big business. Almost all offices use pads of paper.

CONTENTS OF MODULE

Instruction Sheets	Learning Activity Number
I. HOW TO MAKE A PAD OF PAPER	1
Instructor's Final Checklist	
MAKING A PAD OF PAPER	5

CHECK-OUT ACTIVITY

You will be provided the necessary supplies and equipment. Make a pad of paper.

SUGGESTED REFERENCES

Groneman and Feirer, General Industrial Education, McGraw-Hill Book Co., Sixth Edition, 1979.

Basic Industrial Arts (Graphic Arts), McKnight Publishing Co., First Edition, 1978.

Pierson and Richards, Industrial Arts (Skills, Tools, Careers), Benefic Press, 1979.

Dennis and Jenkins, Comprehensive Graphic Arts, Howard Sams Co., First Edition, 1974.

Kagy, Build a Course (Graphic Arts), General Course Series, Goodheart-Willcox Co., Second Edition, 1963.

Miller, Maddox, Smith, Exploring Careers in Industry, McKnight Publishing Co., 1975.

LA#	NOTES AND SUGGESTIONS FOR INSTRUCTION	REFERENCES AND SPECIAL TOOLS AND EQUIPMENT	TEACHER'S NOTES
1	Have the class read the Instruction Sheet. Discuss the information.	Instruction Sheet I	
2	Have the class read about book binding and safety. Discuss the information.	General Industrial Education, pp. 185-190. Basic Industrial Arts (Graphic Arts), pp. 82-86 Industrial Arts (Skills, Tools, Careers), pp. 267-268 Comprehensive Graphic Arts, pp. 441-465 Build a Course (Graphic Arts), pp. 81-89	
3	Make a display of bound papers. Have students identify the binding process for each item.	Display of pads/pamphlets/ books which are bound in different ways: screws, staples, stitching, glue	
4	Demonstrate how to make a pad of paper. Stress safety procedures.	Pencil Ruler Scissors Paper Light-weight cardboard Paper cutter Vise (with shop mode jig) Glue or binder paste	
5	Have each student make a pad of paper. Use the Instructor's Final Checklist to evaluate each pad.	See supplies and equipment listed in Learning Activity #4. Instructor's Final Checklist	

APPENDIX

VOCABULARY LISTING

Align - bring into line; straighten; line up with a straight edge.

Horizontal - running from side to side; parallel with the horizon.

Inclinded - sloping; slanting.

Parallel - being the same distance apart everywhere.

Silk-screen process - a stencil method of printing a flat color design through a piece of silk or other fine cloth on which all parts of the design not to be printed have been stopped out by a film which cannot been penetrated.

Stencil - a thin sheet of paper, metal, or cloth, cut through in such a way that when ink or paint is applied, the designs are marked on the surface beneath.

Vertical - straight up and down.

PRACTICAL ARTS VIDEOTAPES

These videotapes are available through the Kentucky Department of Education, Office of Research and Planning, Division of Materials and Curriculum, 19th Floor, Capital Plaza Tower, Frankfort, Kentucky 40601; Telephone: (502) 564-2000.

Agribusiness, Natural Resources and Environmental Occupations

"Coal: Kentucky's Ace in the Hole": 1/2-inch color cartridge; 23 minutes; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Describes types of occupations available in the coal industry and discusses useful coal by-products.

"Wildlife": 3/4-inch color cassette; 25 minutes. Explains the role of wildlife in conservation.

"Energy Careers": 1/2-inch color cartridge; 15 minutes; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Explores careers in the alternative energy areas of solar energy, wind, and coal liquification.

"Agribusiness": 3/4-inch color cassette; 18 minutes. Deals with careers in agriculture and other farm-related careers.

Business and Office Occupations

"The Secretary": 3/4-inch cassette; 18 minutes. Identifies various careers available in the secretarial field.

Communications and Media Occupations

"One Moment, Please": 1/2-inch color cartridge (2 cartridges available); 18 minutes. Explores occupations, ranging from camera operator to producer, available in radio and television production and necessary qualifications.

"Number, Please": 3/4-inch color cassette; 18 minutes. Discusses careers available in the telephone industry and shows on-the-job interviews for jobs in the industry.

"Roll the Presses": 3/4-inch cassette; 19 minutes, 20 seconds. Gives overview of careers needed to produce a newspaper.

Construction Occupations

"Construction Careers": 1/2-inch color cartridge; 20 minutes; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Explores types of occupations, including carpenters, electricians, and plumbers, in construction careers and necessary skills needed for these careers.

Home Economics Occupations

"Gainful Home Economics": 3/4-inch color cassette; 20 minutes, 45 seconds. Describes occupations related to home economics in which people are gainfully employed.

Health Occupations

"RX Good Health": 1/2-inch color cartridge; 23 minutes; 2 copies on 3/4-inch color cassette. Explores health careers, such as medical secretary, laboratory technician, and physical therapist, in addition to doctor and nurse.

Hospitality and Recreation Occupations

"Hospitality Unlimited": 1/2-inch cartridge tape; 16 minutes; color; also on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Indentifies careers in the restaurant industry and hotel/motel management.

Manufacturing Occupations

"Down the Assembly Line": 3/4-inch cassette; 18 minutes. Depicts production line workers on the job; introduces students to the division of labor system whereby each worker becomes skilled in a single operation.

Orientation to the World of Work

"The Rest of Your Life": 2/4-inch cassette; 30 minutes. Introduces students to step-by-step procedures necessary in seeking employment.

Personal Service Occupations

"Barbering and Cosmetology": 3/4-inch cassette. Explores careers available in these two areas.

Public Service Occupations

"Dear John Mail": 1/2-inch color cartridge; 20 minutes; 2 copies on 3/4-inch color cassette. Explores the types of postal careers and available postal facilities.

"Law Enforcement": 3/4-inch color cassette; 25 minutes. Presents occupations available in law enforcement careers, ranging from policeman to radio operator, and their functions; also identifies necessary qualifications for entering the occupations.

"The Military": 3/4-inch cassette; 17 minutes, 30 seconds. Gives students an overview of various careers associated with the military.

Transportation Occupations

"Tracking A Trucker": 1/2-inch cartridge tape; 22 minutes; color; some on 1/2-inch reel-to-reel; 2 copies on 3/4-inch cassette. Explores occupations needed to support the trucking industry from mechanic to driver.

"The People of the Airlines": 3/4-inch cassette; 22 minutes. Shows people on the job at the airport and on the airplane.

REFERENCES APPROPRIATE FOR CAREER EXPLORATION

Documents

Exploring Careers, 1979
Bulletin 2001
Bureau of Labor Statistics
1371 Peachtree Street, N.E.
Atlanta, GA 30309
Telephone: (404) 881-4418

Occupational Outlook Handbook
Bulletin 1955
Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
(Cloth Cover) Stock No. 029-001-02067-8
(Paper Cover) Stock No. 029-001-02059-7

Dictionary of Occupational Titles
Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402
Stock No. 029-013-00079-9

Sources of Information

Practical Arts Unit
Bureau of Vocational Education
21st Floor
Capital Plaza Tower
Frankfort, KY 40601
Telephone: (502) 564-3472

Gregg/McGraw-Hill
Webster Division
1221 Avenue of the Americas
New York, NY 10020

McKnight Publishing Company
Bloomington, IL 61701

New Jersey Vocational Technical
Curriculum Laboratory
Rutgers University
4103 Kilmer Campus
New Brunswick, NJ 08903

Ohio Department of Education
Division of Vocational Education
Career Development Service
Columbus, OH 43215

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Xerox Educational Publications
P.O. Box 16629
Columbus, OH 43216

ADDRESSING STUDENTS WITH SPECIAL NEEDS

Some students may need special help in achieving competencies. Ideas are presented here for helping identify those students and modifying materials and techniques to help them succeed.

Identifying Students with Special Needs

Generally speaking, those students who cannot succeed in the regular vocational education programs without special help are termed "students with special needs" (Vocational Education Act of 1963 and Amendments). Persons most likely to be identified as students with special needs are the academically and economically disadvantaged and the handicapped--the mentally retarded, deaf and hard of hearing, speech impaired, emotionally disturbed, orthopedically (physically) impaired, health impaired, and learning disabled.

The handicapped are further identified as those (1) with a physical or mental disability that substantially impairs one or more major life activities--walking, seeing, hearing, speaking, working, or learning; (2) who have a record or history of such impairment or condition; and (3) who are regarded as having an impairment (Rehabilitation Act of 1973). Women, minorities, the limited English speaking, and others likely to be underemployed or striving for equal opportunity in employment when meeting the criteria for academic or economic deprivation, are specifically identified in the disadvantaged group to be given special help.

Formulating a Basic Approach to Teaching

Society recognizes the right of every individual to an appropriate education, and the law mandates giving persons with special needs an equal chance. In brief:

1. The Vocational Education Amendments of 1976 give special emphasis to developing and providing programs of vocational education for "those with special educational handicaps" and reserves moneys to do so.

2. The Education for All Handicapped Children Act of 1975 assures that all handicapped children between the ages of three to twenty-one have available to them a free, appropriate public education which relates to their unique needs and is provided in the least restrictive environment.

3. The Rehabilitation Act of 1973 prohibits discrimination on the basis of handicap in any program or activity receiving federal financial assistance and directs employers to take affirmative action in hiring handicapped people.

4. The Education Amendments of 1972 prohibit discrimination on the basis of sex in educational programs receiving or benefiting from federal financial assistance.

5. The Civil Rights Act of 1964 prohibits discrimination in employment on the basis of sex, race, color, religion, or national origin in any program or activity receiving federal financial assistance--including training for employment.

We must, then, provide equal opportunity to learn in our instructional processes.

Basically, an approach to teaching which recognizes individual differences in all students provides the best atmosphere for disadvantaged and handicapped students. This approach allows students to work at different rates; involves large group, small group, and individual instruction; incorporates a variety of instructional materials, media, and teaching techniques; and involves a variety of learning activities--reading, doing, discussing, listening, viewing, experiencing, sharing, cooperating, relating, using the senses, etc. It gives disadvantaged and handicapped students the dignity of exploring, learning, and facing the same experiences and responsibilities as other students, without limiting their possibilities by stereotyped concepts of what they can or cannot do.

It involves being organized, with students completely familiar with the teaching/learning plan. When beginning a CBVE class, for example, explain what learning to attain competencies means, how the students will carry out their work, how to use the modules, where to find materials, how and when tests will be given, how "passing" or achieving competency is determined, and what your role as a teacher is.

It also means teacher direction for those students who are not self-directed learners--those with poor academic backgrounds who thrive on teacher interaction and need immediate feedback, instruction simplified, procedures modified, social development as well as specific job skills, role models, or other special aid. For these students, the learning activities described in the modules may become the teacher's lesson plan and be utilized in large-group and small-group settings before the individual student attempts doing learning activities alone. The teacher-directed class might proceed as follows: teacher introduction to tasks to be performed by module or cluster of modules, explanation of what is to be learned and why, presentation of information in small chunks, demonstrations, student tryout and practice, time for questions and answers, trial test followed by reteaching, and evaluation. The teacher will employ a variety of strategies to address the learning needs and styles of the student.

Using Special Strategies

In order to determine the most appropriate teaching strategies, assess the students for kinds of special help required, and develop a plan for meeting any unique needs. Refer to Mainstreaming Guidebook for Vocational Educators by Dahl, Appleby, and Lipe (Olympus Publishing Company, Salt Lake City, Utah 84105), for modifications and general classroom strategies for meeting the unique needs of the different handicapped populations.

Also, enlist the advice and help of employers, support personnel, and agencies and organizations serving disadvantaged and handicapped populations in your school system and geographic area.

Redirecting Teaching Strategies Usually Used

Many of the strategies usually used with regular students may be redirected or modified and also provide effective learning activities for students with special needs. An explanation of how this many be done follows.

AUDIO-VISUALS (films, filmstrips, slide/tape presentations, videotapes, and ETV and commercial television programs). The combination of sight and sound provides more effective communication than either sight or sound alone. Audio-visuals may be used to supplement or replace other methods of presenting information. The hearing impaired will require captioning, signing, or a printed script written at the appropriate reading level or presenting only essential details. The visually impaired may glean information from the sound source, but additional explanation will need to be provided for any visual display of information which is not explained adequately by the narration. Some audio-visual presentations, particularly 8 mm and 16 mm films, may move too fast for the information to be grasped and need to be evaluated with this in mind.

CONTACT WITH WORK ENVIRONMENT. Handicapping conditions, limited finances, geographic isolation, cultural difference, limited communication skills, and social isolation have caused disadvantaged and handicapped persons to have little contact with the world of work. Familiarity with the work setting in which a particular job takes place, relationships with other workers, business use of the telephone, relationship of one's job to other jobs in the same business are just a few examples of areas where special students may require special exposure by means of field trips, spending a day on the job, viewing films, or having additional training sessions.

Note: For those with physical impairments, field trips, on-site job observations, and work experience opportunities will be limited to "accessible" businesses in the community. Before deciding where to go, determine whether the facilities are accessible.

DEMONSTRATION AND TRYOUT. Demonstration by the teacher, experienced workers, and previously-trained students provide reliable role models for learners. Steps, procedures, precautions, physical manipulation, and techniques are imprinted visually in the order and at the time they should occur in task performance. Immediate tryout of the task following the demonstration or an immediate attempt of each step, technique, or procedure as it is demonstrated provides students direct involvement, permits correction and clarification, and promotes retention. Tryout also identifies areas in performance steps, techniques, tools, and work environment where handicapped students need to have modification in order to perform tasks and meet industry standards.

ELIMINATION OF STEREOTYPING. Disadvantaged and handicapped people face more than the sex role stereotyping myths in their quest for employment. The following are just a few examples: "Deaf people are dumb." "The best job for blind people is tuning pianos." "He'll never be able to do that; he's a cripple." "Mr. _____ was no good; neither is his son." "She can

never do that; her parents didn't go to college." In addition to overcoming the unfounded assumptions of others, disadvantaged and handicapped persons often have equal misconceptions about themselves thinking: "I can never do that." "_____, who is deaf, does assembly line work; that's what I'll do, too." "I'll never be anybody."

Overcoming stereotyping may begin with using sex fair instructional materials and media, exploring interests and abilities, exploring two or three nontraditional jobs, or complimenting accomplishments. It may include planning how to reach an educational goal, providing role models (a person with a like handicap or socioeconomic background who has succeeded), as well as observing persons in nontraditional work roles. It means doing whatever raises aspirations and increases self-worth. It means attempting to eliminate underemployment.

EMPLOYER INVOLVEMENT. Programs with employer input are more practical and in line with the current needs of the job market. Employers who make input feel a special kinship to the program and get a chance to see the students before meeting them in the job market.

For disadvantaged and handicapped students, employer involvement offers a very special opportunity to remove common misconceptions about their capabilities. It enables employers to help with any modification needed, see students performing tasks, and observe how the students relate to others. It gives students a chance to prove that they can do the work, that they will not endanger themselves or others, and that they will not increase expenses. These are major employer concerns. Both students and teachers should be prepared to provide reassuring answers and evidence to show there is no more risk than with the nonhandicapped.

Employers may be involved by giving class presentations; giving suggestions for program improvement and modifications; conducting mock interviews; and providing work experience, observations, worker interviews, job analysis, etc.

HANDS-ON EXPERIENCES, PROBLEM SOLVING, PERSONAL INVOLVEMENT (work samples, tryout exercises, games, role playing). Being involved in a sample of work through completing a product, performing related paper work, or role playing interpersonal relationships on the job keeps students interested, holds attention to the learning tasks, and injects the realities of working and job performance in the teaching/learning situation. It makes the student feel that the instruction is practical and valuable. Accomplishment means "qualified for work"--a great boost to self-esteem for those who doubt self-worth.

The instructor and other students should avoid taking over when handicapped students are awkward or slow in completing a task. The student cannot master the skill if someone else does it.

ILLUSTRATIONS (pictures, graphs, bulletin boards, transparencies, and other visuals). The disadvantaged, the mentally retarded, and the hearing impaired, particularly, are especially oriented to visual methods of learning. Other students, with the exception of the blind and some visually impaired, will appreciate visual presentation of information to

be learned. Student handouts, with the steps to a task illustrated and briefly and simply explained, are especially helpful. Captioning and brief explanations are important supplements. Many illustrations may be adapted for the visually impaired by making them tactile (so that they can be felt). Sometimes enlarged print and bold outlines help.

INTERACTION; INDEPENDENCE. Economic deprivation, geographic isolation, cultural isolation, and restrictions on mobility and social relationships imposed by physical impairments have limited the experiences of the disadvantaged and the handicapped in the community at large. Many have no previous work experience, little observation of the worker's daily routine, and limited social experiences. They have been sheltered at home, absent from the scene, and at best, onlookers.

So that they will not continue in this role after vocational training, experiences in the community and involvement with nonhandicapped people and other students are of utmost importance. These students, as well as their families and the working community, need proof that they can function independently and competently. They need to establish contacts who can serve as references to recommend them as competent workers who can relate to others.

Field trips, worker interviews, cooperative work experience, spending a day on the job, giving talks before civic groups are, therefore, important to the acclimation of disadvantaged and handicapped students to the world of work. Participating in team work projects with other students; pairing with a slower or faster learning peer; pairing with a nonhandicapped, a nondisadvantaged, or person from another race or culture will help achieve faster comprehension and understanding and promote learning communication skills. Teaching special units dealing with related communication and social skills will also be necessary; for example: office etiquette, relationships with employer and other employees, daily work expectations which are not direct task performance, telephone skills, appropriate dress and grooming habits, to name a few.

LISTENING (explaining, discussing, reacting orally). Learning by listening is an important tool to the disadvantaged, the visually impaired, the speech impaired, the learning disabled, and others who "prefer to be told" or "have to be told" rather than read about it.

The visually impaired require identification of familiar sounds in the work place to determine location of different work areas, equipment functions, and hazards. The hearing impaired require sight substitutions, such as indicator lights, for critical sounds they cannot hear. They may use lip reading, interpreting, and sound conduction or amplification devices. The retarded need to become accustomed to the sounds of the work place so that they can work without being distracted. The speech impaired need to be given the right to listen although they may have trouble participating, or may not be able to participate orally.

When information is presented for listening, instruction in how to listen (what to listen for) is important. An outline of the information presented, supplemented by visuals, tryout exercises, showing, completion

of a guidesheet questions to be answered, analysis of cases or problem situations, or other application activities will enhance use and retention of information heard.

Listening is a vocational skill as well as a learning skill. Workers must be able to receive information by listening as well as provide information for listening. Most on-the-job instruction is given orally. Explanation must be given to and received from customers, co-workers, and supervisors.

READING HELPS. Being fluent in the technical vocabulary or language of the job and able to read at the level required by the job is a part of occupational competency. On-the-job reading requirements may vary from the reading of signs to following instructions given in technical manuals. The instruction given in reading, then, for vocational purposes, will depend on the reading skills possessed by the student and the reading requirements of the job. Whether or not a supplemental class in remedial reading is offered, the vocational instructor will find that providing reading aids also helps provide job skill.

Braille materials, large print textbooks, magnifying devices, and recordings may be provided for the visually impaired. Materials may be simplified or outlined for the hearing impaired and others with limited language skills. The native language may be supplied above the English for critical information in textbooks used by the limited English-speaking. Familiarity with the setting in which the printed information is applied may be given via field trips, demonstrations, or films to make reading easier and more meaningful.

Students with exceptional reading problems may require the help of a special reading teacher or be enrolled in a remedial reading program. Some schools employ vocational reading teachers to assist vocational students with developing vocational reading skills and doing the reading required in their programs.

RECORDING AND RECORDINGS (tapes, records, radio programs). Information may be presented and gained by listening to recorded information rather than reading. This strategy will aid the nonreader, the poor reader, the visually impaired, the learning disabled, and others through use as a variation of teaching technique. Recording is also a useful tool for the deaf in notetaking; the recording script may be transcribed into print later by a hearing individual. It will also provide instruction for those who have missed initial classroom presentation of information or who need review. Recordings may be supplemented by slides and pictures.

RELATED MATH. Competency in math, like competency in reading, is more critical to some jobs than to others. Math is best taught in relation to the task of which it is a part. This instruction should incorporate basic math and remedial math instruction as needed. A cooperative or team teaching effort with the math teachers or related math instructors in the school will relieve the burden on the vocational instructor. Enough practice and application exercises should be provided to insure retention of the math operations involved. It is helpful to compile a list of the

math competencies needed to complete the training program, prepare an assessment test to determine student skills, and plan in the beginning a program which the student can follow to attain the basic math competencies prerequisite to the course. If the skills cannot be acquired simultaneously to the job skill training program, the student should postpone entry into the course until the prerequisite skills are attained. It may be necessary to prepare a special manual and modules to provide the related math instruction.

REMEDIAL AND RETENTION EXERCISES. Doing learning activities does not necessarily make students occupationally competent. Performance must be observed, misunderstandings clarified, procedures and techniques corrected, and repetition called for at a future time. Lesson planning should anticipate theory and tasks with which students are likely to have difficulty, include additional practice exercises, and provide alternate approaches to teaching. Repetition for retention should be provided, such as repetition of information in different media presentations or use of different types of application exercises. Review sessions, keeping notebooks, completing work samples, doing live work, and solving cases will also help.

SAFETY. The Occupational Health and Safety Act has increased employer concern for safety and underscored the importance of providing safety instruction along with task performance. It is especially important for the handicapped in two ways: (1) to overcome employer concern about the handicapped person's ability to take care of himself/herself and not endanger the lives of others; (2) to identify and deal with situations which are hazardous for persons because of particular handicaps.

To meet these needs for safety instruction, the handicapped student not only needs the basic or general safety instruction related to the occupation but safety instruction or special safety provisions needed for a person with his/her particular handicap. An example is the installation of a blinking light to tell a person who is deaf that the equipment is running.

Note: The Kentucky Department of Labor, Occupational Safety and Health Program, Division of Education and Training, Frankfort, Kentucky 40601, Phone: (502) 564-6895, offers training programs to help vocational instructors teach safety.

SUPPORT SERVICES. Some students will require emotional, social, and financial support in order to succeed in the instructional programs. Others will need career counseling and special assistance in becoming employed. Government agencies, special schools, special personnel, and organizations for disadvantaged and handicapped persons can provide this help. The following are examples and should not be considered an all-inclusive list: resource room teachers, rehabilitation counselors, guidance counselors, tutors, remedial teachers, instructors in special schools, occupational therapists, diagnostic specialists, media personnel, handicapped workers, workers who are members of a minority group, social workers, and others who can serve as role models. Survey the community to identify persons who serve the needs of disadvantaged and handicapped persons in your area and incorporate their assistance in related learning activities.

UNIQUE MODIFICATIONS (modified equipment, tools, learning aids, changes in work environment, adaptations in course or training program content). Some students require special help in meeting physical job requirements. When considering modification, it is important to concentrate on what the student can do. If at all possible, enable the student to function in the work environment as it is usually found. Employers look favorably on handicapped persons with this kind of preparation.

Rehabilitation centers; organizations and schools for the blind, deaf, dyslectic, disabled, and the mentally handicapped; and publishers and manufacturers of special instructional materials, aids, and equipment can offer aid in meeting unique needs. Consultation with special education personnel and rehabilitation counselors is a good starting point. The student should also be asked to make suggestions.

Care should be taken to insure occupational competency. Prospective employers should be shown how the modification operates in the work setting and how it increases efficiency.

The previously described list of strategies is not exhaustive. Others may be added. All will need to be directed toward the occupation for which training is being given, the students enrolled, the availability of instructional materials, and the community. It is also important to remember that what works well for one group of students or a particular student will not necessarily work well for another.

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: READING THE ARCHITECT'S SCALE

INTRODUCTION

A drafter draws plans to communicate ideas. In order to draw accurate plans, he/she must know how to make accurate measurements by reading a scale. In this task assignment sheet, you will learn how to read the architect's scale.

OBJECTIVE

GIVEN an architect's scale, layout lines, and scale specifications,

MEASURE EACH LINE TO THE SPECIFIED SCALE.

AT LEAST 90% of the readings should be accurate.

LEARNING ACTIVITIES

1. READ about reading a scale. Your instructor will provide a reference. DISCUSS the information.

2. LISTEN to your teacher review the divisions of the architect's scale.

3. IDENTIFY the divisions of an architect's scale. Your teacher will provide an exercise.

4. WATCH your teacher demonstrate how to use the architect's scale.

5. PRACTICE measuring lines of different lengths.

6. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide layout lines of different lengths and scale specifications. Use the architect's scale to measure each line to the specified scale.

Kentucky Department of Education
Raymond Barber, Superintendent of Public Instruction
1982-83

INSTRUCTOR'S FINAL CHECKLIST

READING THE ARCHITECT'S SCALE

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

	Accomplished	Not Accomplished
At least 90% of the student's scale readings were accurate.....	[ ]	[ ]

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: IDENTIFYING COMMON DRAFTING EQUIPMENT

INTRODUCTION

Each profession has its tools of the trade. In drafting, the equipment used is designed to permit the drafter to produce neat, accurate, and legible (sharp, clear) drawings in a short time, which is the most important objective of drafting. In this task assignment sheet, you will become acquainted with some common drafting equipment.

OBJECTIVE

GIVEN pictures of basic drafting equipment,

IDENTIFY EACH PIECE OF EQUIPMENT.

YOU SHOULD identify each piece of the equipment correctly.

LEARNING ACTIVITIES

1. READ about common drafting equipment. Your teacher will provide a reference. MAKE a list of the equipment.

2. LOOK AT a display of the drafting tools and equipment. LISTEN as your teacher describes the use of each one. WRITE a description of the uses of the equipment you listed in Learning Activity 1.

3. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide pictures of common drafting equipment. Write the name of each piece of equipment.

Kentucky Department of Education
Raymond Barber, Superintendent of Public Instruction
1982-83

INSTRUCTOR'S FINAL CHECKLIST

Accomplished	Not Accomplished

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

The student identified each piece of the equipment correctly ..... [ ] [ ]

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: DRAWING PARALLEL LINES

INTRODUCTION

Drawing lines that are perfectly parallel is the basic of all drafting problems. In this task assignment sheet, you will learn how to draw vertical, horizontal, and inclined lines.

OBJECTIVE

GIVEN a T-square, triangle, drawing board or table, pencil, paper, ruler, and masking tape,

DRAW VERTICAL, HORIZONTAL, AND INCLINED PARALLEL LINES.

YOUR DRAWINGS should match your teacher's master copy.

LEARNING ACTIVITIES

1. READ and DISCUSS Instruction Sheet I, HOW TO DRAW PARALLEL LINES.
2. READ about how to layout and draw horizontal, vertical, and inclined lines. Your teacher will provide a reference. DISCUSS the information.
3. WATCH your teacher demonstrate how to align drafting paper. PRACTICE aligning your drafting paper.
4. WATCH your teacher demonstrate how to draw parallel lines. PRACTICE drawing parallel lines. Your teacher will check your work.
5. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

You will be provided the necessary drafting tools and supplies. Draw vertical, horizontal, and inclined parallel lines.

Kentucky Department of Education
Raymond Barber, Superintendent of Public Instruction
1982-83

VOCABULARY

Align - bring into line; straighten; line up with a straight edge.

Horizontal - running from side to side; parallel with the horizon.

Inclined - sloping; slanting.

Parallel - being the same distance apart everywhere.

Vertical - straight up and down.

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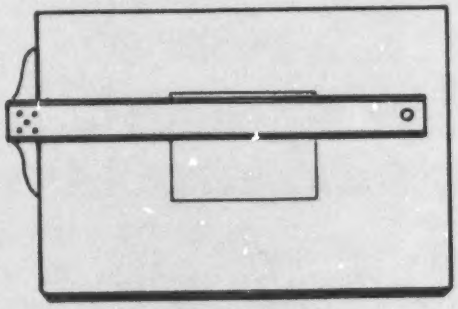
INSTRUCTION SHEET I

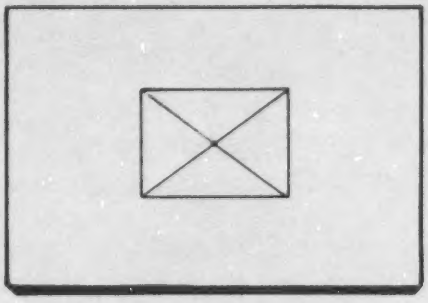
HOW TO DRAW PARALLEL LINES

To draw parallel lines, follow this procedure:

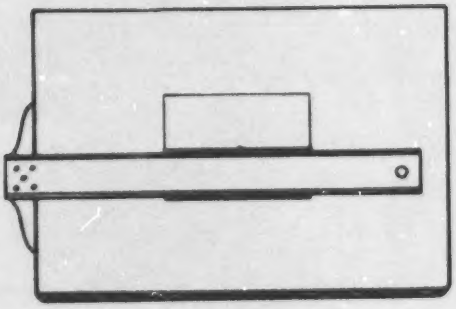
1. Align the top edge of your paper with the top edge of the T-square. (Make sure the head of the T-square is firmly against the edge of the drawing board.) Tape down your paper to the board.



2. Draw very light lines from corner-to-corner in order to locate the exact center of your paper. Use your ruler or straight edge.

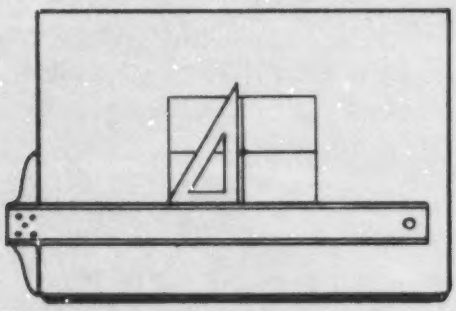


3. Now draw the horizontal center line, using the T-square.



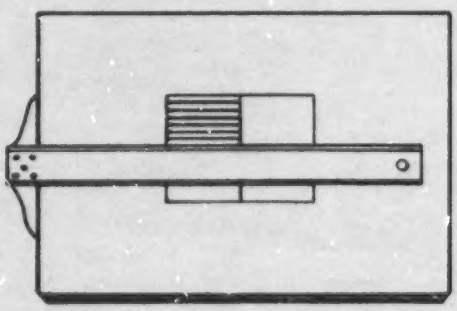
INSTRUCTION SHEET 1, (page 2)

4. With the T-square at the bottom edge of the paper, place the triangle on its blade and draw the vertical center line.

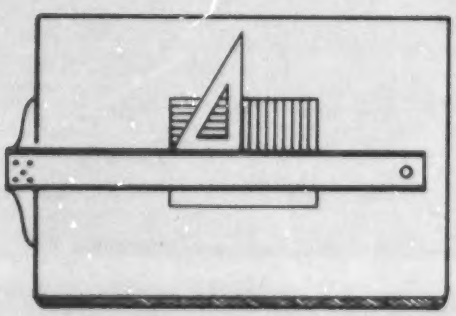


Your paper is now divided into four equal parts.

5. In the top left block, measure down every 1/4" and place a small dot on the edge. Using the T-square, draw a horizontal line from each dot (in that block only). All lines should be parallel.

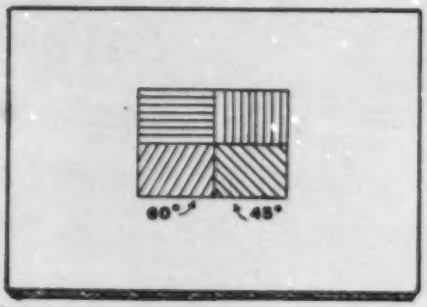


6. In the top right corner, measure across the top edge 1/4" and place a small dot on the edge. Use the T-square and triangle to draw a verticle line from each dot. All lines should be parallel



INSTRUCTION SHEET 1, (page 3)

7. In the two bottom squares, draw inclined lines, using the T-square and triangle. The angles will vary, depending on the triangle you use: 45° or 30°-60°.



INSTRUCTOR'S FINAL CHECKLIST

DRAWING PARALLEL LINES

Accomplished	Not Accomplished

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

The student's lines matched the lines on the master copy ..... [ ] [ ]

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: IDENTIFYING ELECTRONIC COMMUNICATIONS SYSTEMS

INTRODUCTION

One of the most important ways that electronics works for us is in the area of communications. Electronic communications systems allow us to reach people all over the world. Workers in the industrial communications field must be aware of these systems. In this task assignment sheet, you will become familiar with several electronic communications systems.

OBJECTIVE

IDENTIFY ELECTRONIC COMMUNICATIONS SYSTEMS.

YOU SHOULD identify at least eight systems correctly.

LEARNING ACTIVITIES

1. READ about electronics communications, or LISTEN to your teacher tell about electronics communications. IDENTIFY the three basic groups of communications systems. Your teacher will provide a reference.

2. WRITE a brief report on how one of the electronic communications systems works. Your teacher will provide a list of systems.

3. WRITE a brief message in Morse Code. Get with a classmate, and DECIPHER each other's message as you take turns tapping it out.

4. PREPARE a poster or bulletin board display of pictures of electronic communications systems for line, air, or home communications.

5. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

List eight electronic communications systems.

Kentucky Department of Education
Raymond Barber, Superintendent of Public Instruction
1982-83

INSTRUCTOR'S FINAL CHECKLIST

IDENTIFYING ELECTRONICS COMMUNICATIONS SYSTEMS

Accomplished	Not Accomplished

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

The student listed at least eight electronics communications systems correctly ..... [ ] [ ]

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: SKETCHING SERIES CIRCUITS

INTRODUCTION

An electrician must have a basic knowledge of general circuit design. One of these basic designs is the series type circuit. In this task assignment sheet, you will learn how to sketch a series circuit.

OBJECTIVE

GIVEN the power source and load for three series circuits,

MAKE SKETCHES OF THE SERIES CIRCUITS.

EACH SKETCH must be neat, cleanly drawn, and include the correct power source, load, and completed circuit.

LEARNING ACTIVITIES

1. READ about circuits and STUDY the drawings in a reference provided by your teacher. DISCUSS the information.

2. WATCH your teacher sketch and label series circuits.

3. PRACTICE sketching and labeling series circuits. Your teacher will provide some problems.

4. ARRANGE with your instructor to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide you with the power source and load for three series circuits. Sketch and label each series circuit.

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Raymond Barber, Superintendent of Public Instruction
1982-83

INSTRUCTOR'S FINAL CHECKLIST

SKETCHING SERIES CIRCUITS

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

Accomplished	Not Accomplished

Each sketch of a series circuit:

1. Was neat ..... [ ] [ ]
2. Was cleanly drawn ..... [ ] [ ]
3. Included the correct:
   a. Power source ..... [ ] [ ]
   b. Load ..... [ ] [ ]
   c. Completed circuit ..... [ ] [ ]

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: WIRING A PLUG ONTO A CORD

INTRODUCTION

One of the most important parts of any appliance is the plug on the end of the power cord. This plug must be correctly installed for safe and proper operation of the appliance. You will learn to install a plug onto an extension cord in this assignment.

OBJECTIVE

GIVEN an extension cord, a male plug, pocket knife, wire strippers, and standard 4" screwdriver,

WIRE THE PLUG ONTO THE CORD,

YOUR WORK WILL BE RATED in accordance with the Instructor's Final Checklist.

LEARNING ACTIVITIES

1. STUDY THE DIAGRAMS, READ and DISCUSS about wiring a plug. Your teacher will provide a reference.

2. WATCH a demonstration on the proper way to wire a plug.

3. EXAMINE examples of properly wired plugs.

4. PRACTICE wiring a plug.

5. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide the necessary supplies and tools. Wire a plug onto a cord.

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Raymond Barber, Superintendent of Public Instruction
1982-83

INSTRUCTOR'S FINAL CHECKLIST

WIRING A PLUG ONTO A CORD

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

Accomplished	Not Accomplished

In wiring a plug onto a cord, the student:

1. Stripped and split the wire back to the correct length ..... [ ] [ ]
2. Placed the wire through the plug end and tied an underwriters knot ..... [ ] [ ]
3. Wrapped the ends of the wire in the direction the screw tightens ..... [ ] [ ]
4. Tightened the screws ..... [ ] [ ]
5. Placed the protective cover over the prongs ..... [ ] [ ]

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: DESIGNING A SILK-SCREEN STENCIL

INTRODUCTION

Silk-screening is a stencil method of applying designs to various surfaces. In this task assignment sheet, you will learn how to design a silk-screen stencil.

OBJECTIVE

GIVEN a thin sheet of paper, a piece of screen film, and dark, fine-tip marker,

DESIGN A SILK-SCREEN STENCIL.

YOUR design should be simple, neat, in proportion, and balanced on the screen film.

LEARNING ACTIVITIES

1. LOOK AT several silk-screen designs. Your teacher will provide them.
2. LOOK THROUGH magazines to find three simple designs, or DECIDE on three designs of your own. TRACE or MAKE sketches of your designs. SHOW them to your teacher who will help you choose the best one.
3. SKETCH your design onto thin paper.
4. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Trace the outlines of your design onto the screen film.

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1982-83

VOCABULARY

Silk-screen process - a stencil method of printing a flat color design through a piece of silk or other fine cloth on which all parts of the design not to be printed have been stopped out by a film which cannot been penetrated.

Stencil - a thin sheet of paper, metal, or cloth, cut through in such a way that when ink or paint is applied, the designs are marked on the surface beneath.

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INSTRUCTOR'S FINAL CHECKLIST

DESIGNING A SILK-SCREEN STENCIL

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

	Accomplished	Not Accomplished
The student's design was:		
1. Simple	[ ]	[ ]
2. Neat	[ ]	[ ]
3. In proportion	[ ]	[ ]
4. Balanced on the screen film	[ ]	[ ]

Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: HAND CUTTING A SILK-SCREEN STENCIL

INTRODUCTION

Silk-screening is big business. Likely you own a T-shirt on which the design or lettering has been silk-screened. Before the actual design can be made, though, a stencil outlining the design must be made. In this task assignment sheet, you will learn how to hand cut a silk-screen stencil.

OBJECTIVE

GIVEN a piece of screen film, a sharp exact-o knife, and a design,

HAND CUT A SILK-SCREEN STENCIL.

The screen cut should be true to design. The lines should be neat, clean, and crisp with sharp corners and smooth flowing curves. The screen should be cut through the top layer but not through the backing paper.

LEARNING ACTIVITIES

1. READ and STUDY THE DIAGRAMS about silk-screening in a reference provided by your teacher. DISCUSS the information.

2. EXAMINE several examples of screens already cut.

3. WATCH a demonstration of the proper method for hand cutting silk-screen stencils.

4. PRACTICE cutting small screens. COMPARE your work with the examples in Learning Activity 2.

5. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

Your teacher will provide a piece of screen film, a knife, and a design. Hand cut a silk-screen stencil.

Kentucky Department of Education
Raymond Barber, Superintendent of Public Instruction
1982-83

INSTRUCTOR'S FINAL CHECKLIST

HAND CUTTING A SILK-SCREEN STENCIL

Accomplished	Not Accomplished

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

In hand cutting a silk-screen stencil, the student's screen:

1. Was true to design ..... [ ] [ ]
2. Had neat, clean, and crisp lines with sharp corners and smooth flowing curves ..... [ ] [ ]
3. Was cut through only the top layer ..... [ ] [ ]

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Practical Arts

INDUSTRIAL COMMUNICATIONS EXPLORATION

TASK: MAKING A PAD OF PAPER

INTRODUCTION

Many print shops make pads of paper. In order to keep the sheets from becoming dirty, curling, or tearing, the pad is bound on one side. In this task assignment sheet, you will learn how to make a pad of paper.

OBJECTIVE

GIVEN a pencil, ruler, scissors, paper, light-weight cardboard, paper cutter, vise, and glue or binder paste.

MAKE A PAD OF PAPER.

YOUR PAD will be rated in accordance with the Instructor's Final Checklist.

LEARNING ACTIVITIES

1. READ and DISCUSS Instruction Sheet 1, HOW TO MAKE A PAD OF PAPER.
2. READ about book binding and safety. Your teacher will provide a reference. DISCUSS the information.
3. IDENTIFY different binding processes. Your teacher will make a display of bound pads, pamphlets, and books.
4. WATCH a demonstration on making a pad of paper.
5. ARRANGE with your teacher to complete this task by going through the CHECK-OUT ACTIVITY.

CHECK-OUT ACTIVITY

You will be provided the necessary supplies and equipment. Make a pad of paper.

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1982-83

INSTRUCTION SHEET 1

HOW TO MAKE A PAD OF PAPER

A pad of paper may be bound in three ways:

--Drilled and bound with screws.
--Stitched or stapled.
--Glued.

Follow this procedure when making your pad of paper:

1. Cut all sheets of paper to the same size.
2. Place the paper in the vise.
3. Back the pad with light-weight cardboard.
4. Apply the glue or binder paste along one edge.
5. Remove the pad from the vise.
6. Trim the loose edges.

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INSTRUCTOR'S FINAL CHECKLIST

MAKING A PAD OF PAPER

Performance Level: All items must receive a rating of ACCOMPLISHED. If any items are rated NOT ACCOMPLISHED, the student and the instructor will decide if any learning activities must be repeated.

Accomplished	Not Accomplished

The student's pad of paper met the following standards:

1.	All sheets were the same size	[ ]	[ ]
2.	All sheets were clean and free of tears or wrinkles	[ ]	[ ]
3.	All sheets were fastened neatly and securely	[ ]	[ ]
4.	Each sheet could be torn off easily	[ ]	[ ]